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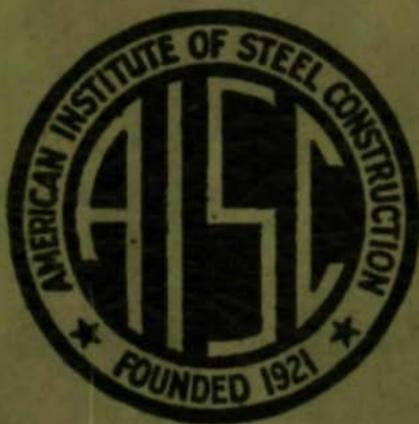
AMERICAN INSTITUTE OF STEEL CONSTRUCTION

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CODE
OF
STANDARD PRACTICE



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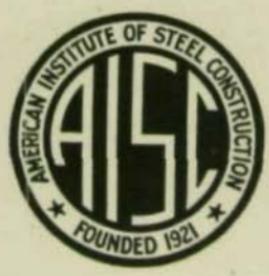
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OCTOBER 1, 1924.

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00622 AMERICAN INSTITUTE OF STEEL CONSTRUCTION

CODE OF STANDARD PRACTICE



OCTOBER 1, 1924.

ENGINEERING OFFICES:
1052 LEADER BUILDING,
CLEVELAND, OHIO

EXECUTIVE OFFICES:
350 MADISON AVENUE,
NEW YORK, N. Y.

PREFACE

Since the use of structural steel came into existence about thirty-five years ago, there has developed an industry engaged in the fabrication and erection of this material which at the present time is annually furnishing over \$300,000,000 worth of material to the public.

During this period of evolution it is obvious that many inconsistent practices should have come into existence, and the American Institute of Steel Construction, representing the industry between the rolling mills and the buying public, have undertaken the codifying of the various conditions, with a view of establishing uniform practice.

The Institute's Specification on the design, fabrication, and erection of structural steel has been received with wide spread approval, and this Code of Standard Practice is now being issued to cover conditions not touched in the Specification.

SECTION 1. DESIGN

Unless otherwise specified or required, the design, fabrication and erection of structural steel shall conform to the Standard Specification of the American Institute of Steel Construction for buildings, dated June 1, 1923, or as amended to date.

SECTION 2. CLASSIFICATION

(a) **General.** The Steel and iron items entering into the construction of a structure are divided into the following classes:

- CLASS "A"—Structural Steel and Iron
- CLASS "B"—Ornamental Steel and Iron
- CLASS "C"—Steel Floor Joists
- CLASS "D"—Miscellaneous Steel and Iron

In contracting to furnish the material for a structure where the material to be furnished is designated as structural steel and iron, ornamental steel and iron, steel floor joists, or miscellaneous steel and iron, the Seller will furnish only such items under each classification as are listed below, and no other items will be included unless by special understanding. In cases where materials in excess of minimum requirements are furnished to provide for waste or loss, all unused material remaining after completion of work shall be the property of the Seller and returned to him.

(b) **Class "A" Structural Steel and Iron.**

Contracts taken to furnish the structural steel and iron for a building are based on furnishing the following items only:

- Anchors for structural steel only
- Bases of steel or iron only
- Beams of rolled structural steel
- Bearing plates for structural steel
- Brackets made of structural steel shapes
- Channels of rolled structural steel

Channels and angle supports only for suspended ceilings where they attach to structural steel, but not including small channel or angle furring

- Columns, structural steel, cast iron and pipe
- Girders of structural steel
- Grillage beams and girders—structural steel
- Hangers of structural steel
- Lintels as shown or enumerated
- Marquise (structural frame only)
- Rivets and bolts for field connections, as follows:

1. The Seller shall furnish sufficient rivets of suitable size, plus at least 10% to cover waste for all field connections of steel to steel which are designated as riveted field connections.

2. The Seller shall furnish sufficient bolts of suitable size, plus 5% to cover waste for all field connections of steel to steel which are designated to be bolted.

3. No fitting up bolts or washers will be included unless specifically called for.

Separators, angles, tees, clips, bracing and detail fittings in connection with structural steel frame

Tie rods

Trusses of structural steel

Unless specifically agreed to in the contract, the Seller of the structural steel will not provide field connections or field holes for the ornamental steel and iron, the miscellaneous steel and iron, nor the materials for any other trades.

(c) Class "B" Ornamental Steel and Iron.

Contracts taken to furnish the ornamental steel and iron for a building are based on furnishing the following items only:

All bronze and brass work, except hardware fittings

Balconies

Cast iron cornices

Curtain guides

Elevator fronts and enclosures

Grilles and gratings

Iron store fronts

Lamp standards and brackets

Marquise (steel or iron, except frame) see Class "A"

Ornamental brackets, steel or iron

Ornamental inside stairs, steel or iron

Ornamental outside steel or iron stairs, including fire escapes

Safety treads

Railings (gas pipes, ornamental or brass)

Sills and thresholds, (brass, steel or iron)

Spiral stairs, steel or iron

Window sills and frames, steel or iron

Wire work, ornamental steel or iron

(d) Class "C" Steel Floor Joists.

Contracts taken to furnish the steel floor joists for a building are based on furnishing the following items only:

Steel joists which are not a part of the structural steel frame for the building, and which are devised to carry the floor or roof panels.

Bracing and bridging for floor joists; clips for fastening floor joists.

Stirrup and Hanger for Floor Joists

Ties for floor joists

(e) Class "D" Miscellaneous Steel and Iron.

The nature and character of the material of this classification makes it impossible to cover all items and it is recommended that the Seller taking the contract to furnish the miscellaneous steel and iron work for a building specify all items in detail which it is intended to furnish. The general list of items under this classification is as follows:

- Area gratings
- Cast iron cover and frames
- Cast iron rainwater receivers
- Cast iron downspout shoes
- Cleanouts
- Coal chutes
- Column guards
- Door frames and bucks
- Foot scrapers
- Furnace or fireplace dampers
- Flag pole
- Ladders
- Pin rails
- Sidewalk doors
- Sills and curb angles, and anchors for same
- Special bolts or anchors where distinctly shown on the plans
- Stairs made of plain structural steel—not including treads of other materials
- Stacks
- Steel and cast iron platforms
- Steel or iron chimney caps
- Thimbles
- Wall plate anchors
- Wheel guards
- Window guards
- Wire screens for partitions, door and window guards (this does not include fly screens)

(f) Materials not classed under the above headings.

The following items are not covered by classifications A-B-C and D, and will in no case be furnished by the Seller unless specifically agreed to and mentioned in the contract. It is not possible to designate every detail and the list is typical of material not included in classifications A-B-C and D. It is shown here to assist the Architect and Engineer in avoiding confusion.

- Ash hoists
- Awning boxes
- Boilers
- Elevators or accessories

Elevator guides or sheave beams
Expanded metal
Furring
Glass for any purpose whatever
Hollow metal doors or frames
Hoppers
Mail chutes
Metal lockers
Miscellaneous carpenter or masonry bolts for connecting wood to wood, steel to wood, or wood to stone, etc.
Name plates
Patented devices
Pilot and driving nuts
Reinforcing steel
Rolling doors
Sheet metal work or corrugated sidings and roofing
Sidewalk lights
Steel sash and steel sash partitions
Spiral slides
Suspended ceiling, except as noted under Class "A"
Tanks and pans
Toilet partitions
Treads, except steel or iron
Vault doors
Ventilating brick
Wall, ceiling and floor registers
Wood handrails
Wood handrail brackets *
And all other material not mentioned

SECTION 3. INVOICING

When conditions make it possible to award contracts on a lump sum basis the confusion of determining weights will be avoided. Scale weights involve a variation which frequently lead to a compromise based on calculated weights.

The rules hereafter established, while not giving exact weights, are the basis upon which the Seller must make a lump sum or a pound price bid and they eliminate the necessity of increased cost of shop drawings and other refinements of manufacture which would very materially increase costs if exact weights were required.

(a) **Weights.** Structural steel and iron sold at a unit price per pound, hundred weight (100#) or ton (2000#) shall be invoiced on the calculated weights of shapes, plates, bars, castings, rivets and bolts, based on the detailed shop drawings and shop bills as follows:

1. **Dimensions.** The weight will be figured on the basis of rectangular dimensions for all plates, and overall dimensions for all

structural shapes, and with no deductions for copes, clips, sheared edges, punchings, borings, milling or planing. When plates can be economically cut in multiples out of one large rectangular plate, then the calculated weight of the plates shall be determined by the area of the large plate.

2. Over-run

(a) To the nominal theoretical weights of all sheared plates will be added one-half the allowance for over-run in weights in accordance with the Specifications of the American Society for Testing Materials. See tables in appendix.

(b) Reinforcing bars when not sold on a basis of scale weights shall be invoiced by the Seller at the theoretical weights plus 1½% to allow for over-run weight of deformations, etc.

(c) To the theoretical weight of all castings shall be added 10% to cover average over-run.

3. Rivets

(a) The weight of shop rivets will be based on the weights shown in the following table:

1. Rivets	¾" in diameter	20#	per 100 rivets
2. Rivets	⅝" in diameter	30#	per 100 rivets
3. Rivets	¾" in diameter	50#	per 100 rivets
4. Rivets	⅞" in diameter	100#	per 100 rivets
5. Rivets	1" in diameter	150#	per 100 rivets
6. Rivets	1⅛" in diameter	250#	per 100 rivets
7. Rivets	1¼" in diameter	325#	per 100 rivets

(b) Field rivets and bolts shall be invoiced at their actual weight.

4. Paint. One-half of 1% of the theoretical weights of the material painted will be added for each coat of shop paint. For work oiled, one-fourth of 1% for each coat will be added.

SECTION 4. DRAWINGS AND SPECIFICATIONS

(a) The Buyer shall furnish the Seller within a time agreed to in the contract a survey of the lot lines, together with a complete and full design of the structural steel frame definitely locating all openings, levels, etc.; and showing all material to be furnished by the Seller with such information as may be necessary for the completion of the shop drawings by the Seller. All such information and drawings shall be consistent with the original drawings and specifications.

(b) In case of discrepancies between the drawings and the specifications prepared by either the Seller or the Buyer, the specification shall govern; and in case of discrepancies between the scaled dimensions on the drawings and the figures written on them, the figures shall govern.

Should the Seller in the execution of his work find discrepancies in

the information furnished by the Buyer, he shall refer such discrepancies to the Buyer before proceeding further with work which would be affected.

(c) Shop Drawings shall be made and submitted to the representative of the Buyer, who shall examine the same and return them approved with such corrections as he finds necessary. They shall be corrected by the Seller if necessary and returned for the Buyer's file as finally approved. The Seller may proceed with shop work, but in so doing he shall assume responsibility for having properly made the corrections indicated by the Buyer.

(d) Shop Drawings prepared by the Seller and approved by a representative of the Buyer shall be deemed the correct interpretation of the work to be done, but does not relieve the Seller of responsibility for the accuracy of details.

(e) After the plans and shop drawings have been "approved" or "approved as noted" by the authority designated in the contract, any further changes required shall be made at the expense of the Buyer.

(f) When detailed shop drawings are furnished by the Buyer no responsibility for misfits due to errors in the drawings will be assumed by the Seller.

SECTION 5. GOOD WORKMANSHIP AND STANDARD PRACTICE

Good workmanship and standard practice in a modern structural shop is defined as follows:

(a) **Material.** Stock material shall be of a quality substantially equal to that called for by the specifications of the American Society for Testing Materials for the classification covering its intended use; and mill test reports shall constitute sufficient record as to the quality of material carried in stock. It is obviously impossible for the Seller to maintain records of heat or blow numbers of every piece of material in his stock, and the same shall not be required if all his stock purchases are made under an established specification as to grade and quality.

Whenever a shop maintains such a practice in carrying a stock of material, it is deemed good practice to permit the use of such stock material in its fabricating operations whenever the shop desires to do so, instead of ordering items from the mill for a specific operation. Stock materials bought under no particular specifications, or under specifications materially less rigid than those mentioned above, or stock material which has not been subject to mill or other recognized test reports, shall not be used, except as noted below, without the approval of the Buyer and under rigid inspection.

It is permitted to use unidentified stock material free from surface imperfections for short sections of minor importance or for small

unimportant details, where the quality of the material could not affect the strength of the structure.

(b) **Straightening.** All material shall be straight, and if straightening or flattening is necessary, it shall be done by a process that will not injure the material. Sharp kinks or bends shall be cause for rejection.

(c) **Punching.** The punch shall be $1/16''$ larger than the nominal diameter of the rivet, and the die opening not more than $3/8''$ larger than the diameter of the punch. The thickness of the material in punched work shall not be greater than nominal diameter of the rivet, plus $1/8''$. The accuracy of the punching shall be such that for any group of holes when assembled, 75% shall admit a rod equal to the diameter of the cold rivet at right angles to the plane of the connection, otherwise the holes shall be reamed.

Likewise, when work is assembled, all holes which will not admit a rod $1/8''$ smaller than the nominal diameter of the cold rivet shall be reamed.

(d) **Reaming.** Reamed holes shall not be required unless specifically agreed to in the contract. When specifications require that work shall be sub-punched and reamed the die used for punching shall be $1/16''$ smaller than the nominal diameter of the rivet, and the assembled holes shall be reamed to a diameter of $1/16''$ larger than the nominal diameter of the rivet.

(e) **Planing.** Planing or finishing of sheared plates or shapes will not be required unless specifically called for by the specifications or drawings.

(f) **Assembling.** All parts of riveted members shall be well pinned or bolted and rigidly held together while riveting. Drifting done during assembling shall not distort the metal to enlarge the hole on the side on which the die was used in punching.

Finished members shall be true to line and free from twists, bends and open joints. It is not the function of fitting up bolts to bring improperly straightened material into place, thus causing a strain on the rivets in the finished work.

Compression members shall not have a lateral variation greater than 1 to 1000 of the axial length between the points which are to be laterally supported.

An allowable variation of $1/32''$ is permissible in the over all length of members with both ends milled.

Members without milled ends which are to be assembled to other steel parts of the structure shall not have an error greater than $1/16''$ for members 30 feet or less in length, and not more than $3/8''$ for members over 30 feet in length.

(g) **Riveting.** Rivets shall be heated uniformly to a light cherry red, and shall be driven and the heads formed with a proper sized

die while hot. When heated and ready for driving, rivets shall be free from slag scale and carbon deposits. When driven they shall completely fill the holes.

Loose, burned or otherwise defective rivets shall be replaced. After driving, the rivet heads shall be full, neatly made, concentric with the rivet hole, and in full contact with the surface of the member. Caulking the rivet head shall not be permitted.

(h) **Burning Torch.** The use of a burning torch is permissible if the burned metal is not carrying stresses during the burning. Stresses shall not be transmitted into the metal through a burned surface.

The material adjacent to a burned surface for a distance equal to the thickness of the material shall not be considered a part of the net section for tension members.

SECTION 6. INSPECTION AND DELIVERY

(a) **Inspection.** The Seller's shop service includes inspection by his own inspectors, and shop or mill inspection other than this shall be paid for by the Buyer, except when otherwise called for in the specification.

(b) **Acceptance of Materials.** When material is inspected by a representative of the Buyer at the shop, the acceptance of such material by the Buyer's representative shall be considered the Buyer's final approval; but the Seller shall be responsible for the accuracy of the work and for defective material or workmanship which may be discovered before the completion of the structure.

(c) **Order of Delivery.** Unless the order or sequence of delivery is specifically arranged for before the work is undertaken, it will be at the convenience of the Seller.

(d) **Materials sold delivered.** When material is sold delivered on cars or trucks at the site of the structure, all unloading shall be done by the Buyer, and all responsibility to persons or property during such unloading shall be at the Buyer's risk.

(e) **Loss in shipment where material is sold fabricated only.**
The quantity of material shown by the shipping statement will in all cases govern settlements unless notice of shortage is immediately reported to the agent of the delivering carrier, and his signed verification obtained, and like notice sent to the Seller within 48 hours after receipt of the shipment, in order that the alleged shortage may be investigated by the Seller.

(f) **Storage of Material.** Where conditions make it necessary that material be stored for any length of time, and the contract does not provide for such storage, payments are to come due and be payable the same as if the material had been delivered at the

building site; and the Seller shall be compensated for handling, storage, and other increased expenses that may result from such conditions.

SECTION 7. ERECTION

(a) **Foundations.** The Seller or erector shall not be responsible for the strength or suitability of the foundations.

(b) **Building Lines and Bench Marks.** Building lines and bench marks at the site of the structure shall be accurately located by the Buyer, and carefully shown or described by him or his representative to the steel erector or his engineer.

(c) **Steel or Cast Iron Bases.** All steel grillage, slabs, or cast iron bases in the bridge or building work shall be set to grade and line by the Buyer unless otherwise specifically agreed upon.

(d) **Anchor Bolts.** All anchor or foundation bolts shall be set by the Buyer.

(e) **Working Room.** The erection contractor shall be entitled to sufficient space at the site of the structure in a place convenient to him to place his derrick and other necessary erection equipment. When conditions at the site permit, he shall be entitled to storage space for enough material to keep his erection force in continuous operation.

(f) **Plumbing Up.** The temporary guys and braces shall be the property of the Seller, and if after the steel has been plumbed and leveled, the work of completing the structure by other contractors is suspended or delayed, the owner of the temporary guys and braces shall receive reasonable compensation for their use. The guys shall be removed by the Buyer at his expense, and returned to the Seller in as good condition as when placed in the building with a reasonable depreciation.

Immediately upon completion by the steel erector, the Buyer shall assure himself by whatever agencies he may elect, that the steel erector's work is plumb and level, and properly guyed. If it is not, he should immediately notify the erector and direct him to perfect his work. After the steel erector has guyed and plumbed the work once to the satisfaction of the Buyer, his responsibility ceases. Any further work in guying or plumbing shall be performed entirely at the Buyer's expense.

In the setting or erecting of structural steel work, the individual pieces shall be considered plumb or level where the error does not exceed 1 to 500.

For exterior columns and columns adjacent to elevator shafts of multiple story buildings, the error from plumb shall not exceed 1 to 1000 for the total height of the column.

(g) Opportunity to Investigate Errors.

Correction of minor misfits and a reasonable amount of reaming and cutting of excess stock from rivets will be considered as a legitimate part of erection. Any error in shop work which prevents the proper assembling and fitting up of parts by the moderate use of drift pins, or a moderate amount of reaming and slight chipping or cutting, shall immediately be reported to the Seller and his approval of the method of correction obtained.

(h) Wall Plates. All loose masonry bearing plates for beams, lintels, trusses or columns, shall be set to grade and line by the Buyer ready for the steel erector to set his work.

(i) Loose Lintels. Loose lintels or pieces of all kinds and descriptions required by the design of a building to carry brick work over openings, and which lintels or pieces are not attached in any way to the rest of the steel structure, and cannot be placed except as the masonry work advances, will not be erected by the steel erector unless by special agreement.

(j) Ornamental Iron & Bronze. Fine ornamental iron and bronze work is considered as finishing material, and shall not be set in a building until after the marble, plaster, and other work, except decorating, is in place.

(k) Elevator Framing. The setting or erection of guides, cars, machinery, cables, sheaves, pans, etc., for elevators, is not to be required of the steel erector.

(l) Field Assembling. The size of assembled pieces of structural steel is fixed by the permissible weight and clearance dimensions of transportation. Unless such conditions are provided for by the Buyer or his engineer, the Seller shall provide for such field connections as will require the least field work; and such field connections shall be a part of the erection work.

(m) Cutting and Patching. The Seller shall not be required to cut or patch any work, except his own, unless particularly specified, and will not alter his own work required by changes or inaccuracies in the building without being reimbursed for the expense of such changes.

(n) Insurance. The erector shall indemnify and save harmless the Buyer from all claims and costs arising from any damages to person or property occurring in the performance of his work due to any act or neglect of his employees or agents.

(o) Temporary Floors. The Buyer shall provide plank, and cover all floors required by municipal or state laws, excepting the floor upon which the erecting derricks are located. This floor will be covered by the steel erector for working purposes.

(p) **Field Paint.** Unless specifically agreed to in the contract, field paint shall be considered a phase of maintenance, and such protection as is necessary shall be provided for by the Buyer.

SECTION 8. DELAYS IN PROSECUTION OF WORK

(a) Causes not controlled by Seller nor Buyer.

Neither Seller nor Buyer shall be responsible for delays in performance caused by delays at rolling mills, or in transportation, or due to strikes, fires, floods, storms, or other circumstances beyond their reasonable control whether related or unrelated, or similar or dissimilar to any of the foregoing. In case of delay to work due to any of the above causes, a reasonable extension of time shall be given for the completion of the work.

(b) **Delays caused by the Seller.** Should the Seller at any time, except as provided in the preceding paragraphs, refuse or neglect to supply enough workmen of proper skill or material of proper quality, or to carry on the work with promptness and diligence, the Buyer, if not in default, may give the Seller ten days written notice, and at the end of that time if the Seller continues to neglect the work, the Buyer may provide such labor or materials and deduct the cost from any money due or to become due the Seller under the contract, or may terminate the employment of the Seller under the agreement and take possession of the premises and of all materials, tools, and appliances thereon and employ any other person to finish the work. In the latter case, the Seller shall receive no further payment until the work be finished; then if the unpaid balance that would be due under the contract exceeds the cost to the Buyer of finishing the work, such excess shall be paid to the Seller; but if such cost exceeds such unpaid balance, the Seller shall pay the excess to the Buyer.

(c) Delays caused by the Buyer.

The Buyer shall be responsible for delays resulting from lack of complete data and from changes or revisions or the tardy approval of drawings. Information given later than the date fixed in the contract for the delivery of complete information shall not be cause for a claim by the Seller unless such delay affects Seller's costs or manufacturing operations. When such delays increase costs or compel changes in the Seller's manufacturing operations he shall be recompensed for the damage resulting.

If information is available for the Seller to manufacture or erect the material in accordance with the conditions of the contract, and if he is prevented from the orderly and continuous prosecution of such work by any act or a neglect of the Buyer, the Seller may continue his work and may place fabricated material in storage at his own plant or elsewhere and the Buyer shall, upon tender of transfer of title, pay for said material as if it had been delivered under the terms of the contract. The Buyer shall also recompense the

Seller for all expense incurred in the storing, caring for, or re-handling of said material; and for damage resulting from changed manufacturing operations. On erection work the Seller shall be recompensed for any extra expense incurred in wages and in the transportation of men or equipment to and from the site and their maintenance at the site during the period of delay, also for extra expense resulting from overtime made necessary by such delay.

If for more than one month at any time, any act or neglect of the Buyer or any legal proceeding taken against him, prevents the starting or continuous prosecution of the work, the Seller may give the Buyer ten days written notice, and at the end of that time, if the Buyer continues at fault or the legal proceeding continues effective, the Seller may terminate his obligations under the contract; in which case the Buyer shall at once pay the Seller for the work done and material provided, and all damages the Seller may sustain, including damages resulting from changed shop operations.

SECTION 9. EXTRA WORK

(a) **General.** Charges for extra work, or work not covered by the contract, shall be made on a basis that is definitely and mutually understood between the Buyer and the Seller at the time the occasion for such extra expense arises.

In the absence of such an understanding between the Buyer and Seller, the following is listed as proper expenses.

(b) **Material.** All extra material required shall be invoiced out at current warehouse prices, plus cost of fabrication, including regular overhead costs, plus transportation costs, and an agreed per cent for profit.

(c) **Drafting Labor.** All extra labor in the drafting room shall be invoiced out at cost plus overhead, plus an agreed per cent for profit.

(d) **Shop Work.** All extra shop labor shall be charged at actual cost as shown by the time cards; to this shall be added the overhead expense, and the use of equipment and power. The sum of these charges shall be considered the actual cost of the shop, to which shall be added an agreed per cent for profit.

(e) **Field Work.** All extra labor required in the erection of structural steel shall be invoiced as follows:

The actual labor cost shall be that shown by the time cards, to which shall be added the actual cost of insurance, the cost of labor transportation when necessary, and an additional allowance for overhead expense. The sum of these shall be considered the actual cost, to which shall be added an agreed per cent for profit.

(f) **Miscellaneous.** Any additional cost, such as hauling, painting, crating, freight, etc., shall be charged to actual cost, plus overhead, plus insurance, plus an agreed per cent for profit.

(g) **Overtime.** On contract work where the Seller has not agreed to work overtime, he shall not be required to do so without being paid for his extra expense and a profit.

(h) **Extra Cleaning.** If because of continued storage, or for any other reason not the fault of the Seller, it should be necessary to clean and repaint the steel work, the cost of this additional cleaning and painting should be paid for as an extra, including regular overhead charges as specified for extra work elsewhere in this section.

SECTION 10. PROPOSALS AND CONTRACTS

(a) **Direct Contracts.** It is recommended that in all cases where the structural steel frame of a building is self supporting, and also in all such other cases where the structural steel and iron items entering into the construction of a building can easily be separated from the other materials of construction, that all contracts for such structural steel or iron be made separately by the owner or his representative with the steel contractor.

(b) **Conflicts.** In the event of a conflict between the terms and conditions of the proposal, and the terms and conditions stated in the plans and specifications, the terms of the proposal shall govern.

(c) **Price for additions or deductions.**

The Seller is not to be required nor expected to make the same unit price for additions as for deductions to the list of material required for a structure. The contract, may however, specify a certain other unit price for such materials as may be deducted from the quantity of material as originally contemplated by the contract.

(d) **Material not shown or called for.** Clauses in the specification to the effect that all steel and iron items necessary to complete the structure shall be furnished by the Seller, whether or not they are shown on the plans or called for in the specifications, being obviously unfair, will not be recognized or subscribed to. The Seller shall, however, furnish all material and labor for details that may be required for such steel and iron work as is shown on the drawings or called for in the specification, although such details may themselves not be shown or called for.

(e) **Items not to be furnished.** Unless specifically mentioned in the request for bids, or specifically agreed to, the bidders do not estimate or include the following items in their proposals:

Any charges for surety bonds or insurance not required by law, or any other general charge such as building permits, license fees or taxes for permission to work in city or state, engineering fees, removal of rubbish, patching or repairing of plaster or masonry work, office or telephone service, light, heat, fire insurance, or the erection of temporary structures, enclosures or stairs.

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(f) **Terms.** The following terms of payment are adopted as standard and will govern in all cases, except when otherwise agreed to in the contract.

1. All payments shall be made in funds current at par in the city in which the Seller furnishing the material is located.

2. All materials for export, net cash in exchange for shipping documents will be required.

3. For all materials to be erected by the Seller, the Buyer shall on the 10th day of each month pay an amount equal to not less than 90% of the contract value of all materials shipped, stored or ready for shipment; and not less than 90% of the contract value of the erection performed during the preceding month; and shall pay the remainder within 10 days after the completion of the steel contract; but the amount reserved by the Buyer shall at no time exceed double the contract value of the work remaining yet to be done.

4. When the material which is not to be erected by the Seller is sold to a Buyer whose credit has been established with the Seller, terms net cash for contract value of each shipment. Payments to be made on the 10th day of the month following shipments.

5. Unless otherwise agreed to, when material is sold delivered at, or freight is allowed to destination, the Buyer shall pay freight charges and the Seller shall accept receipted freight bills as cash to apply on matured payments due on or after arrival at destination of materials covered by such freight expense bills.

6. Payments shall all be considered to be due and shall be paid at the time specified, regardless of the final settlement for the building as a whole, or for the work of any other trade; and when the contract is with a general contractor the payment for steel shall not be delayed by such general contractor pending his receiving estimates of payments from the owner.

7. Amounts past due shall bear interest at the maximum lawful rate.

STANDARD FORM OF PROPOSAL

The Seller for the consideration of.....
 hereby agrees to furnish all the materials and to perform all of the
 labor in accordance with the conditions of the Code of Standard
 Practice of the American Institute of Steel Construction dated October
 1st, 1924, for furnishing and erecting the.....
 for
 located at
 as shown on the drawings
 and as mentioned in the specifications for
 pages.....

Terms of payment shall be in accordance with the above men-
 tioned Code of Practice, except as follows

The Seller further agrees to furnish such material and complete
 such labor within the following time

The Buyer shall furnish complete information within
 days to enable the Seller to complete all necessary shop drawings.

Extra materials and labor required by the Seller shall be invoiced
 to the Buyer at their full cost plus a profit of
 per cent.

Materials or equipment belonging to the Seller but used by
 the Buyer or his agents during the completion of other trades, shall
 be returned to the Seller and invoiced at the original price, less a
 depreciation of per cent.

Inasmuch as materials are subject to prior sale, this proposal is
 made for acceptance on or before and the price is
 subject to change without notice.

Accepted By:

.....
 Herein designated as the Buyer
 or his authorized agent

Date of Acceptance:

SIGNED BY

.....
 Witnessed By:

.....
 Herein designated as Seller

.....
 Date.....

APPENDIX

The following tables giving the permissible variation in plates ordered to weight, and the permissible over weight of plates ordered to thickness are taken from the Standard Specification of the American Society for Testing Materials for Structural Steel for Buildings, Serial Designation A 9-21.

Table 1.—Permissible Variations of Plates Ordered to Weight

Ordered Weight, Lb. per Sq. Ft.	Permissible Variations in Average Weights per Square Foot of Plates for Widths Given, Expressed in Percentages of Ordered Weights																Ordered Weight, Lb. per Sq. Ft.			
	Under 48 in.,		48 to 60 in., excl.		60 to 72 in., excl.		72 to 84 in., excl.		84 to 96 in., excl.		96 to 108 in., excl.		108 to 120 in., excl.		120 to 132 in., excl.			132 in. or over		
	Over	Under	Over	Under	Over	Under	Over	Under	Over	Under	Over	Under	Over	Under	Over	Under		Over	Under	
Under 5	5	3	5.5	3	6	3	7	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Under 5
5 to 7.5 excl.	4.5	3	5	3	5.5	3	6	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5 to 7.5 excl.
7.5 to 10 "	4	3	4.5	3	5	3	5.5	3	6	3	7	3	8	3	.....	.....	.....	.....	.....	7.5 to 10 "
10 to 12.5 "	3.5	2.5	4	3	4.5	3	5	3	5.5	3	6	3	7	3	8	3	9	3	.....	10 to 12.5 "
12.5 to 15 "	3	2	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	7	3	8	3	.....	12.5 to 15 "
15 to 17.5 "	2.5	2	3	3	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	7	3	.....	15 to 17.5 "
17.5 to 20 "	2	1.5	2.5	3	3	3	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	.....	17.5 to 20 "
20 to 25 "	2	1.5	2.5	3	3	3	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	.....	20 to 25 "
25 to 30 "	2	1.5	2.5	3	3	3	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	.....	25 to 30 "
30 to 40 "	2	1.5	2.5	3	3	3	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	.....	30 to 40 "
40 or over	2	1.5	2.5	3	3	3	3.5	3	4	3	4.5	3	5	3	5.5	3	6	3	.....	40 or over

Note.—The weight per square foot of individual plates shall not vary from the ordered weight by more than $1\frac{1}{2}$ times the amount given in this table.

Table II.—Permissible Overweights of Plates Ordered to Thickness

Ordered Thickness, In.	Permissible Excess in Average Weights per Square Foot of Plates for Widths Given, Expressed in Percentages of Nominal Weights									Ordered Thickness, In.
	Under 48 in.	48 to 60 in., excl.	60 to 72 in., excl.	72 to 84 in., excl.	84 to 96 in., excl.	96 to 108 in., excl.	108 to 120 in., excl.	120 to 132 in., excl.	132 in. or over	
Under $\frac{1}{8}$	9	10	12	14	.....	.....	.....	.....	.....	Under $\frac{3}{8}$
$\frac{1}{8}$ to $\frac{3}{8}$ excl.	8	9	10	12	.....	.....	.....	.....	.....	$\frac{3}{8}$ to $\frac{1}{4}$ excl.
$\frac{3}{8}$ to $\frac{1}{4}$ "	7	8	9	10	12	.....	.....	.....	.....	$\frac{1}{4}$ to $\frac{3}{8}$ "
$\frac{1}{4}$ to $\frac{5}{8}$ "	6	7	8	9	10	12	14	16	19	$\frac{5}{8}$ to $\frac{1}{2}$ "
$\frac{5}{8}$ to $\frac{3}{8}$ "	5	6	7	8	9	10	12	14	17	$\frac{3}{8}$ to $\frac{5}{8}$ "
$\frac{3}{8}$ to $\frac{1}{2}$ "	4.5	5	6	7	8	9	10	12	15	$\frac{1}{2}$ to $\frac{3}{4}$ "
$\frac{1}{2}$ to $\frac{5}{8}$ "	4	4.5	5	6	7	8	9	10	13	$\frac{5}{8}$ to $\frac{3}{4}$ "
$\frac{5}{8}$ to $\frac{3}{4}$ "	3.5	4	4.5	5	6	7	8	9	11	$\frac{3}{4}$ to 1 "
$\frac{3}{4}$ to 1 "	3	3.5	4	4.5	5	6	7	8	9	1 to 1 1/4 "
1 or over	2.5	3	3.5	4	4.5	5	6	7	8	1 1/4 to 1 1/2 "
	2.5	2.5	3	3.5	4	4.5	5	6	7	1 or over

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